

**TITLE: RETROFITTABLE SEVERE DUTY SEAL FOR A SHAFT**

**ABSTRACT**

A unitary sleeve lip seal can be used to provide permanently lubricated sealed bearings in severe service conditions such as the track pins of track-driven vehicles and agricultural equipment. The seal has a labyrinthine exclusion path and multiple dust lips contacting the sleeve in addition to the main sealing lip. A garter spring encircling the main sealing lip may enable the seal to operate at moderately elevated pressures. The sleeve has a radial flange at the outermost end. Elastomeric lips extend between the sleeve flange and a faceplate that terminates the outside end of the seal housing. The seal is packed with water-resistant grease and can, when installed in association with grease-packed bearings can create a permanently lubricated bearing/shaft assembly that requires no re-greasing. Resilient coatings both protect the sleeve and case and also improve leak resistance, especially when the seal is retrofitted onto shafts that have been damaged. The design provides a seal having performance that is comparable to that of dual cone face seals at a much lower cost and in a much smaller assembly. Seals made according to this design can easily be made in standard sizes that can serve as direct replacements for previously available seals.